**Abstract**

The project titled "Calculation of Object Dimensions [Image Processing]" leverages image processing techniques to measure object dimensions in real-time using a mobile phone as a webcam. This approach integrates mobile streaming technology with advanced image processing algorithms for efficient and practical object measurement.

**Introduction:**

This project utilizes the high-resolution camera of a mobile phone, transformed into an IP webcam, to capture live video streams. The primary goal is to calculate object dimensions within these streams using image processing techniques.

**Methodology:**

**1. Mobile Camera as IP Webcam:**

* The IP Webcam app converts a mobile phone into a live video streaming device, accessible via a specified URL.

**2. Image Capture and Preprocessing:**

* Frames are captured from the live stream every 3 seconds, converted to grayscale, and smoothed using Gaussian blur.

**3. Edge Detection and Contour Analysis:**

* Canny edge detection identifies object boundaries, followed by dilation and erosion to close gaps.
* Contours are detected and sorted; the largest contour serves as the reference object for calibration.

**4. Dimension Calculation:**

* The known width of the reference object calibrates the system, determining the pixel-to-inch ratio.
* Dimensions of other objects are calculated using this ratio and displayed on the processed frame.

**5. Real-Time Processing Loop:**

* The script continuously captures, processes, and displays frames, allowing real-time measurement until 'q' is pressed.

**Results:**

The system accurately captures and processes frames from the mobile camera stream, continuously updating measurements in real-time.

**Applications:**

This project is applicable in fields like manufacturing, quality control, logistics, and education, providing a cost-effective and flexible measurement solution using mobile devices and open-source software.

**Conclusion:**

"Calculation of Object Dimensions [Image Processing]" demonstrates the integration of mobile streaming technology with image processing for real-time measurement, showcasing the practical application and versatility of modern mobile devices in technological solutions.

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